TCT-59

Effect of Intracoronary Abciximab and Aspiration Thrombectomy on Microvascular Obstruction in Large Anterior Myocardial Infarction: The INFUSE-AMI MRI Substudy

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Background: Microvascular obstruction (MVO) predicts poor outcome in ST-elevation myocardial infarction (STEMI). Whether bolus intracoronary abciximab or manual aspiration thrombectomy will reduce incidence and extent of MVO within the infarction zone in STEMI is unknown.
Methods: INFUSE-AMI was a 2×2 factorial design trial in which patients with proximal or mid left anterior descending (LAD) coronary artery occlusion presenting within 5 hours of symptom onset and receiving bivalirudin anticoagulation were randomized to (1) bolus intracoronary abciximab via the ClearWay RX catheter vs. no abciximab and (2) manual aspiration thrombectomy with the Export catheter vs. no aspiration. A formal substudy included 174 pts who underwent MRI imaging at both 5 and 30 days. MVO was defined as a black area inside the zone of delayed enhancement (i.e. infarction area). This substudy was powered for MVO size as a percentage of total left ventricular (LV) mass, assuming 50% reduction in MVO from 4% (SD 3%) in the control arm to 2% (SD1.5%) with abciximab or thrombectomy.
Results: The extent of MVO was less than predicted in all groups, and was not affected by treatment allocation (Table). Intracoronary abciximab improved left ventricular stroke index at 5 days.

	Abciximab (n=93)	No Abciximab (n=83)	p value	Thrombectomy (n=89)	No Thrombectomy (n=80)	p value
Presence of MVO	51.6% (47/91)	60.3% (47/78)	0.26	59.6% (47/89)	51.3% (41/80)	0.28
MVO (% of total LV)	0.19 [0.00, 2.39]	0.71 [0.00, 2.57]	0.54	0.67 [0.00, 2.70]	0.35 [0.00, 2.23]	0.28
Infarct mass (% of total LV)	19.6 [11.2, 32.2]	23.7 [17.6, 31.4]	0.15	23.5 [13.3, 31.9]	20.2 [12.9, 30.2]	0.47
LV stroke volume index (cc/m^2)	43.3 [35.7, 48.7]	39.6 [34.4, 45.4]	0.05	39.6 [34.3, 45.8]	42.6 [35.7, 47.3]	0.35
LV ejection fraction (%)	48.3 [40.3, 53.5]	47.6 [41.2, 52.5]	0.5	48.1 [40.5, 53.5]	48.2 [41.2, 53.6]	0.86

Conclusions: Neither intracoronary abciximab nor thrombectomy affected the frequency and extent of MVO. The low extent of MVO observed with modern primary PCI and bivalirudin anticoagulation in patients presenting early after infarct onset is notable.

TCT-60

Comparison Of Manual Aspiration With Rheolytic Thrombectomy In Acute Myocardial Infarction: The Final 6-Month Results Of The SMART Primary PCI Trial

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Background: No data exist regarding the comparison between manual aspiration thrombectomy (MAT) and rheolytic thrombectomy (RT) using the optical coherence tomography (OCT) to assess residual thrombus burden after thrombectomy in acute myocardial infarction (AMI). The SMART trial compared the efficacy of RT and MAT in thrombus removal before direct infarct artery stenting in AMI.
Methods: Single-center, randomized, 2-arm study. The primary end point was residual thrombus burden assessed as number of coronary quadrants containing thrombus by OCT after thrombectomy and before infarct artery stenting. Secondary end points were: 1) angiographic and electrocardigraphic signs of reperfusion, 2) 6-month malapposed stent strut rate by follow-up OCT.
Results: Eighty AMI patients (≤ 6 hours from symptom onset) were randomly allocated (1:1) to RT or MAT. There were no significant difference in the baseline clinical and angiographic characteristics between the 2 study groups. All but 1 patient had residual thrombus after MAT or RT. The number of coronary quadrants containing thrombus were 53 [31-83] in the RT arm and 65 [33-111] in MTA arm, respectively (p=0.083); while maximal thrombus area was 1.7 [0.7-2.6] and 2.0 [1.1-3.5], respectively (p=0.092). Large residual thrombus defined as the number of quadrants containing thrombus > the median value was more frequent in the MAT arm than in the RT arm (60% and 37%, p=0.039). Patients treated with RT were more likely to have a post-thrombectomy coronary TIMI grade 3 flow (87% vs 57%; p=0.003), and a lower TIMI thrombus grade (1.6 ± 0.9 vs 2.4 ± 1.2, p=0.001) as compared to MAT. After infarct artery stenting patients randomized to RT were more likely to have a final TIMI grade 3 flow (95% vs 80%, p=0.043) and TIMI grade 3 blush (72% vs 50%, p=0.039), and early ST-segment elevation resolution (92% vs 77%, p = 0.060), as compared to MAT. The relationship between baseline residual thrombus burden by OCT and 6-month stent strut malapposed rate will be presented at the meeting.
Conclusions: MAT or RT allow only incomplete removal of thrombus in the setting of AMI. RT as compared to MAT is more effective in thrombus removal and is associated with a better myocardial reperfusion.

TCT-61

Infarct Size-Determined Uptake of CD34+ Cells in the Peri-Infarct Zone and Left Ventricular Remodeling: Insights from Integration of Labeled Cells Uptake SPECT Visualization with Sequential Cardiac MRI

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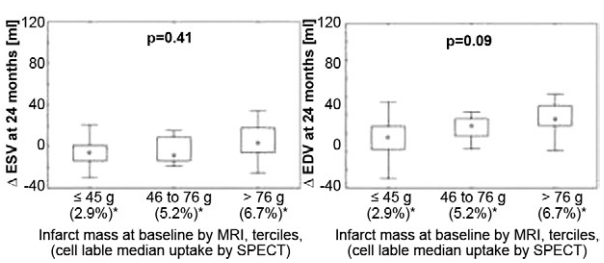
Background: Infarct size (IS) is a well-established determinant of adverse LV remodeling. Experimental evidence indicates that attenuation of LV remodeling is critically dependent on salvage of apoptosis-prone myocytes in the peri-infarct zone.
Methods: Thirty-one subjects (age 36-69 years) with pPCI-treated anterior STEMI, peak TnI 138 [58-356ng/dL] (median [range]) and sustained LVEF≤45% were recruited. On day 10 [7-12], 4.3x106 [0.7-9.9x106] 99mTc-extametazime-labeled CD34+ cells were administered transcoronary (LAD). Gadolinium late-enhanced total infarct mass (IS, cMRI) was 57 [11-112]g. One hour after administration, 1.7-9.9% labeled cells activity localized in myocardium (whole-body γ-scan).
Results: Image fusion of labeled cells SPECT with LV perfusion SPECT or cMRI infarct images indicated peri-infarct zone cell uptake. Labeled cells early engraftment correlated with peak TnI (r=0.70, p=0.0001), Infarct Border Zone mass (IBZ, cMRI, r=0.82, p<0.0001), total IS (r=0.62, p=0.0006) and severely impaired perfusion segments number (SPECT, Ø coefficient=0.83, p=0.01). IBZ mass correlated with ΔLE at 2years (r=-0.6, p<0.001). ΔLVEF was +3.48% (p=0.08 vs. baseline LVEF). With the peri-infarct zone cell uptake proportional to IS, IS was not a determinant of ΔLVESV (p=0.41) or ΔLVEDV by cMRI (p=0.09)(Fig, *p=0.003).
Conclusions: This largest human study with labeled CD34+ cell transplantation after recent STEMI suggests that the higher cell uptake in the peri-infarct zone in subjects with larger infarcts might be associated with inhibition of LV remodeling. Further strategies should focus on boosting this effect.



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